

The Meteoric Shower of November 13-14, as witnessed at Mr. Bishop's Observatory, Twickenham. Note by J. R. Hind, Esq.

The points to which attention was chiefly directed here were the position of the Radiant and the enumeration of the meteors, with a view to fix the precise time of the maximum. Our party consisted of four observers—M. Du Chaillu, Mr. Hampshire, Mr. Wiss, and myself. With regard to number, the following figures exhibit some of the results obtained:—

From	h	m	s	to	h	m	s	101	meteors were counted.	
	12	0	0		12	22	0	101		
	12	22	0	„	12	30	0	102	„	„
	12	30	0	„	12	35	0	100	„	„
	12	35	0	„	12	39	10	100	„	„
	12	39	10	„	12	42	0	100	„	„
	12	42	0	„	12	45	40	100	„	„
	12	45	40	„	12	48	25	100	„	„
	12	48	25	„	12	51	50	100	„	„
	12	51	50	„	12	54	35	100	„	„
	12	54	35	„	12	57	30	100	„	„
	12	57	30	„	12	59	38	100	„	„
	12	59	38	„	13	0	0	17	„	„

Making a total between 12^h 0^m and 13^h 0^m (Greenwich time) of 1120 meteors.

From 13^h 0^m to 13^h 7^m 5^s 514 were counted, and at the latter moment a somewhat sudden increase in the number occurred to such an extent that it became almost impossible to estimate the meteors in successive minutes, nevertheless 13^h 11^m was indicated as the time of maximum, and I think without a probable error exceeding 1½ or 2 minutes at the most. From 13^h 52^m to 14^h 8^m 55^s we counted 300, but remarked that they were generally less conspicuous for brightness and length of train than about the maximum. From 15^h 9^m to 15^h 23^m 55^s, 100, mostly faint, were noted. From 16^h 42^m to 17^h 0^m 12^s and from 17^h 45^m to 18^h 0^m only 5. Bright flashes of lightning occurred at 12^h 38^m 50^s, 14^h 10^m, and 15^h 55^m.

The position of the Radiant was surprisingly well marked between 13^h and 14^h. It was about equidistant from ε and μ Leonis in Right Ascension 148° 0, and North Polar Distance 66° 0. No material deviation from this point was suspected; indeed, the persistence of the Radiant in the same spot in Leo was one of the most evident and striking features in the phenomenon.

Some few of the meteors were of considerable brilliancy,

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but upon the whole they were not remarkable on the score of brightness. I should imagine it will be very difficult to identify any number of them at two or more stations.

Mr. Bishop, who carefully watched the meteoric shower at Weymouth, fixed upon 13^h local time for the maximum; this estimation, corresponding to 13^h 10^m, Greenwich time, is in close agreement with the result obtained at Twickenham. At Weymouth some of the meteors had the characteristics of fireballs, leaving long trains of a greenish colour. The display commenced at 11^h 20^m. Mr. Bishop was informed by Lieut. Baker, of H.M.S. *Lord Clyde*, in Portland Roads, that all the meteors appeared to him to radiate from a centre 20° above the horizon, and due east (for maximum time), which he also considered to be 13^h. In Malta Harbour, on board H.M.S. the *Prince Consort*, the maximum was judged to have taken place at 14^h 15^m local time, or at 13^h 19^m mean time at Greenwich.

Accounts of the Meteors of 1866, November 13-14, were also received from—

Mr. J. Birmingham, at Milbrook, Tuam. The position of a starlike and stationary meteor in about R.A. 10^h 2^m 30^s and N.P.D. 69° 28', is referred to as seeming to mark the radiant-point. The number of meteors counted up to 12^h 50^m was 1500, but from that time the counting could no longer be depended upon. The meteors are described as having the nuclei generally red or deep orange, while the tails were greenish or bluish, and often left a line of vapour in their place after their extinction. In one instance this smoky streak began instantly to move sideways at right angles to its motion when luminous; and in another, where it formed a considerable mass, it curled up in a crescent that for a short time continued its forward course very slowly and then as slowly retrograded; it was observed plainly for half-an-hour, and might have been visible longer.

The Rev. A. W. Deey, Alton, Hampshire. The number of meteors as counted by himself and a friend, on the north and south side of a great circle through the zenith and the head of *Leo* were—